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# SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE •

August 15, 1942

## Saving By Using

See Page 105

A SCIENCE SERVICE PUBLICATION

# *Do You Know?*

An average-size *tanker* will carry as much fuel oil as four trains of 70 cars each.

A specially treated *wrapping paper* which retards the growth of molds is used to wrap butter and cheese.

The yearly egg production of 2,000,000 hens and all the milk from 155,000 cows went into *candy* in America last year.

Curtailment of automobiles, tires and gasoline has increased the number of *bicycles* in use in the United States by more than a million since 1940.

*Peppermint* speeds digestion and causes the stomach to empty faster, which justifies the custom of serving after-dinner mints following a heavy meal.

Plain good housekeeping . . . rug sweeping, keeping hair and lint from floor cracks, thorough cleaning of clothes . . . is one of the best safeguards against *moths*.

Manufacture of all *jewelry* except wedding rings has been banned in Australia, because jewelers are switching to production of precision instruments for the armed forces.

Approximately 49 pounds of *soybean meal* are produced from each bushel of soybeans; a crop of 2,200,000 tons will be obtained from the 1941 soybean plantings, according to the U. S. Department of Agriculture.

*Propionate salts,* used extensively in bread to inhibit mold growth, are also being added to tobacco for the same purpose.

*Ewes* studied on a California mountain range nursed their lambs an average of 3.5 minutes a day, the nursing periods being about 30 seconds in length.

Brazil is the world's greatest untapped source of *fats and oils,* according to the U. S. Bureau of Foreign and Domestic Commerce.

Fibrous spongy material from the *dish-rag gourd,* or loofah, will supply oil filters for ships as soon as the gourd can be established as a commercial crop.

# Question Box

## Page numbers of Questions discussed in this issue:


**AGRICULTURE**

What do sick animals cost the farmer? p. 109.

What scientists have come to visit this country from Argentina? p. 102.

**ASTRONOMY**

What indications are there that other worlds exist? p. 99.

**ENGINEERING**

How can a radio locator be used to find and measure the speed of meteors? p. 104.

How can rubber be saved by using it? p. 105.

**GENERAL SCIENCE**

What sort of war work should a science teacher do? p. 104.

**INVENTION**

Of what use is a brake on a cannon? p. 104.

What is the advantage of the new British turtle-back hangar? p. 100.

**MEDICINE**

How healthy is the U. S. Army? p. 104.

What are the possibilities that a chemical cure for cancer will be developed? p. 101.

What other chemicals may act in the same way as the sulfa drugs? p. 105.

What sort of vanishing cream will keep chiggers away? p. 110.

**METALLURGY**

How is stainless steel being nobilized? p. 105.

**NUTRITION**

How can you have butter without refrigeration in the tropics? p. 105.

**PHARMACY**

What are the new anti-malarial drugs? p. 108.

**PSYCHIATRY**

What hospital recently lost its patients? p. 99.

**PSYCHOLOGY**

How often do you need to take a day off for efficient war work? p. 103.

**PUBLIC HEALTH**

How are the British preparing for poison gas? p. 105.

**RESOURCES**

From what additional sources may aluminum be obtained? p. 102.

**VETERINARY MEDICINE**

Why did a scientist carefully protect germs during an airplane flight? p. 108.

**ZOOLOGY**

What sort of "mingly color" creature is at large in Florida? p. 100.


***Most articles which appear in* SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.***


# SCIENCE NEWS LETTER

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ASTRONOMY

# More Worlds in Heavens, Perhaps, Than Supposed

## Sir James Jeans Makes Assertion Based on His Theory That Sun Was Huge Nebula When Planets Were Born

OTHER planets, perhaps some of them inhabited, circulating about other suns or stars than ours, may be much more numerous than formerly supposed, Sir James Jeans, famed British scientist, states in a letter to the London scientific journal *Nature* (June 20).

Sir James bases his assertion on a theory of the origin of the planets propounded by him in 1916, now reclothed with modern figures. This is the famous tidal theory. Another star passed close to the sun, and gravitational attraction caused each to elongate in the direction of the other, just as the moon and sun raise bulges in the waters of the ocean and thus cause the tides. But the two stars passed so close that the matter in the sun's bulges was drawn completely away from it into two long streamers which later condensed into the planets.

If the sun and the other stars were of their present sizes at the time, calculations show that the chance of such an event happening in a period of 2,000,000,000 years is only 1 in 2,500,000,000, practically nil. This led astronomers to the conclusion that the formation of the sun's planets was an extraordinarily unusual event, and that even if the universe had existed many millions of times longer than now supposed, there must be very few other inhabited worlds, or even none.

But Sir James assumes that the sun at the time it gave birth to the planets was a huge, diffuse nebula, extending as far as the orbit of the present outermost planet. Back in 1916, when Sir James first proposed his theory, this was Neptune. Now the outermost planet is Pluto. Assuming Pluto's orbit as the outer limit of the nebula would make the sun's diameter 5,000 times its present size.

If at that time all the other stars were enlarged in the same proportion, the chances of a planet-forming encounter, Sir James calculates, would be 18,300,000 times as great as for their present sizes. In a period of 2,000,000,000 years, which is now supposed to be about the age of the present universe, the chance of such an encounter is one in eight. Among the thousands of billions of stars that compose the visible universe, this blessed event must have occurred many times. Instead of being barren, the universe may be crowded.

*Science News Letter, August 15, 1942*

PSYCHIATRY

## Decreased Drug Addiction May Have Complex Cause

A "GHOST" hospital without patients would be a rarity these days, but there is one class of patients which is actually decreasing in numbers. These are the drug addicts, whose supplies have been cut off by wartime shipping conditions.

"Narcotic Farm," until recently a thriving U. S. Public Health Hospital for drug addicts, at Fort Worth, Texas, found itself so hard up for patients that it is now being used as an overflow for St. Elizabeths Hospital in Washington.

Psychiatrists have observed that drug addiction is apt to decrease in wartime anyway, but there is some disagreement as to the reasons. Dr. Lawrence Kolb of the U. S. Public Health Service believes that the shortage of drugs, plus effective control measures, explains it.

The number of hospitalized drug patients is no index to the total number of addicts, anyway, because so few of them submit voluntarily to treatment. The "cure" is not particularly pleasant. The Fort Worth hospital, "Narcotic Farm," recruited its patients from persons convicted of drug peddling, who were found to be addicts themselves and sent to a hospital instead of a jail.

It has been estimated that at least 95% of peddlers are also drug addicts. After they have been persuaded to "take the cure," lack of supplies will now force many of them into other lines of endeavor, particularly with wartime employment on the increase. Lack of supplies and lack of peddlers cut down the number of new drug addicts taking their place in the hospitals.

After they have been cured of the drug habit, can they become useful citizens? Yes and no, say psychiatrists. Without thoroughgoing psychiatric treatment, they remain sick people whose craving for drugs was only one symptom of a diseased personality.

*Science News Letter, August 15, 1942*

*FORMIDABLE*

***This worker at one of the General Electric's war plants is putting together the turret armament for an airplane, not a battleship. The metal sleeves on the gun barrels keep them from swaying when the plane travels at more than 300 miles an hour.***

ZOOLOGY

# Wicked Wildcat Reported At Large in Florida

## Observer Describes Rare Visitor as Looking Like an "Everlasting Big Tomcat of Sort of Mingly Color"

A DANGEROUS saboteur is reported at large in the woods of northern Florida, that nobody seems to be particularly anxious to track down. Dogs least of all, for the marauder has no respect at all for dogs and would as soon kill them as look at them.

Said saboteur is a tropical American wildcat, known variously as jaguarundi, teyra and makya. It is a moderately frequent animal in Mexico and adjacent parts of Texas, rare in Louisiana, and until its tracks began to be seen recently in northern Florida had been unknown from this state. It has now been definitely identified by the Florida State Department of Game and Fresh Water Fish as the jaguarundi.

For a cat, the animal is a rather odd looking night prowler. Its legs are short and stout, its tail more than half its total over-all length of five feet when fully grown, its body long, arched and slender. One observer says that at a distance it might be taken for an oversized otter. Another describes it rather vaguely as "an indiscriminate sort of varmint like an everlasting big tomcat with sawed-off legs and a sort of mingly color."

Its color is almost as variable as a domestic fireside mouser. It may be pale, tawny, brownish, mixed gray and black, or wholly black.

Farmers in West Florida are acquainted at least with the depredations of the jaguarundi. They call it the "dog killer". But it kills chickens, goats, pigs and newborn calves as well as dogs. Its everyday fare, however, probably consists of the smaller wild mammals, ground-loving birds, reptiles and insects.

Few have seen the jaguarundi. Its habits are nocturnal. But even in the daytime it manages to conceal its movements pretty successfully. It can attain amazing speed, running with its belly close to the ground. It can slink through the driest brush or crackling dead palmetto leaves as silently as a snake. It can squeeze itself under a fallen tree as flat as a Johnny-cake, or disappear down a hole whose circumference seems hardly greater than that of the tip of its tail.

William F. Jacobs of the Florida Forest and Park Service has received reports of its appearance in the Highland Hammock State Park near Sebring but has never seen one himself.

*Science News Letter, August 15, 1942*

### *FOR AIR COMMANDOS*

***Now gliders that steal up on the enemy quietly in the night can make their getaway safely with the aid of a plane which picks them up in full flight. The official photographs of the Army Air Forces shown on this and the facing page, demonstrate the new technique. At left is shown a plane flying over pick-up device at 100 miles per hour. The glider is on the ground in the background. The next picture shows the moment of contact between the airplane's pick-up hook and the rope to the glider. On the facing page, the glider is already in the air. A special device protects airplane and glider against the shock of the sudden pick-up.***

INVENTION

## British Inventors Patent New "Turtle-Back" Hangar

A "TURTLE-BACK" hangar, that can be set up quickly and as rapidly and easily concealed from enemy air observation, is the product of two English inventors, W. C. Inman of London and G. R. Dawbarn of Woking, and is protected by U. S. patent 2,292,078.

Framework of the hangar consists of a series of wide, arching ribs, coming down flush with the ground at the ends. When covered with any suitable roofing material, this forms a vaulted structure, the main body of the building. For pursuit planes and other small craft, the ribs can be built of trussed wooden members; for larger planes construction would be of metal.

The blending of the sides with the earth eliminates telltale shadows at the sides. Similar shadow elimination is accomplished by closing the ends with gradual slopes of canvas or other material.

*Science News Letter, August 15, 1942*

MEDICINE

# Predicts Cure For Cancer Will Be Found Before Cause

## Results of Recent Research on Chemical Cures May Be of Far-Reaching Significance, Report Predicts

THE CURE of cancer will be achieved before the cause is discovered, Dr. Cornelius P. Rhoads, director of Memorial Hospital, predicts in the hospital's biennium report.

Search for a chemical cure for the disease, consequently, is being carried on at Memorial at the same time that investigations into the cause of cancer are made. No chemical cure has been found yet, Dr. Rhoads emphasizes, but a method has been devised for testing in the test tube the poisoning effects on the cancer cell of various chemical compounds. So far, some 70 different compounds have been tested.

"A type of chemical has been found," Dr. Rhoads reports, "which in the test tube appears to interfere with the health of one type of cancer cell of man, that found in cancer of the breast, and in the same concentration not to interfere with the well-being of any normal organ tissue so far tested. The chemicals which have this preferential anti-cancer effect are characterized by a common structure.

"The results may have a far-reaching significance. They prove apparently that there is a real difference between cancer cells and normal cells in their sensitivity to certain types of chemicals. The cancer is more sensitive and can be killed by compounds which do not kill the normal tissue. This observation alone is sufficient justification for the intensive continuation of the experiments."

Dr. Rhoads is not yet ready to disclose the name of the type of chemical found to have this preferential anti-cancer effect because the studies have not yet gone far enough to justify considering it as a cancer cure.

Surgical cures of breast cancer in the primary operable stage have been achieved in 51% of all cases and in 75.5% of cases of the most favorable type (with no extension of cancer from the original focus), Memorial Hospital reports show. These cures represent patients alive and well five years after the operation.

Attempts to find a cure for cancer by starvation of the cancer cell are being made. Preliminary steps, now under way, consist in studies of the diet requirements of cancer and normal cells.

Delving into the cause of cancer, Memorial chemists, with the help of Harvard University, are engaged on the gigantic task of searching for cancer-causing chemicals in the kidney excretions of patients. Certain classes of chemicals, not unlike naturally occurring body chemicals such as the sex hormones, are known to be capable of causing cancer. Scientists believe that a defect in body chemistry may result in the cancer-chemicals being formed from the natural ones. If so, they should be present in the excretions of cancer patients but not of normal patients.

The difficulty of searching for them may be understood from the fact that the chemist who first described the chemical structure of the male hormones was able to isolate from thousands of gallons of kidney excretions about as much of the hormone chemical as could be placed on the tip of a pencil.

*Science News Letter, August 15, 1942*

ASTRONOMY

## Blackout Eliminates Puzzling Spectral Lines

THE BLACKOUT or dimout brings some compensations that may not be apparent to non-scientists. Not long ago Dr. Edwin P. Hubble, Mt. Wilson Observatory astronomer, in discussing the kind of universe we live in as determined from observations of the very faint and distant stars with the giant 100-inch Mt. Wilson telescope, told of strange spectral lines in the star light that were very puzzling. After much trouble it was finally discovered the source of this light was the neon signs of Los Angeles reflected from the ocean into the sky and the telescope. Presumably, thanks to the war's dimming of the signs, any photographs taken now will have less such earthly interference.

*Science News Letter, August 15, 1942*

RESOURCES

# Aluminum From Many Sources Intensely Considered By WPB

## Processes Involving Alunite and Low Grade Bauxite Have Been Studied for Months by NAS

THE War Production Board which recently has approved the production of aluminum from clay is also intensely considering several processes involving not only clay, but alunite, low-grade bauxite and other domestic sources in the event that our supplies of high-grade bauxite from British and Dutch Guiana, which has accounted for 60% of our whole supply, may be greatly diminished or wholly cut off by the U-boat warfare in the Caribbean Sea.

These processes have been investigated for more than a year by scientists of the National Research Council of the National Academy of Sciences, and a report has been made at the request of the WPB by Dr. Zay Jeffries, chairman of the Metals Conservation and Substitution Group of the Advisory Committee on Metals and Minerals.

All the aluminum in this country has been made until now from high-grade bauxite (containing less than 7% of silica) by the Bayer process, which is the cheapest way, provided high-grade bauxite is available. But this process does not extract all of the alumina (aluminum oxide) from even the best of ore, and the poorer the ore, the greater the waste and the greater the expense for chemicals.

The clay processes can be used in two ways, the committee found. Aluminum oxide (alumina) can be extracted directly from the clay, or silica can be partially removed from high-silica (low-grade) bauxite to convert it to low-silica bauxite which can then be treated by the Bayer method. In either case the metal is then extracted by electrolysis.

The tailings, thrown out by the Bayer plants, called red mud on account of its color, can be considered as clay, the committee pointed out, and the clay process applied. They recommended that clay-reducing plants be added to existing Bayer plants. High-silica bauxite can then be fed to the Bayer plant which will remove about 70% of the alumina and the clay process applied to the tailings will get most of the rest.

In particular the committee recommended that the clay process be applied to the millions of tons of red mud that has accumulated during the past thirty or more years at the East St. Louis plant of the Aluminum Company of America. This mud contains as much alumina as is contained in 1,000,000 tons of bauxite. It also contains large quantities of lime and soda, materials used in both the Bayer and the clay processes. The proportion of alumina to silica is higher than in kaolin clay which is almost pure aluminum silicate. It is good aluminum ore. It is already mined and pulverized, and contains a part of the materials needed for its own reduction. There's half a million tons of aluminum in that thar hill.

There are two kinds of clay process, the acid and the alkaline. The committee favors the latter which consists in the main in mixing the clay with lime and soda, sintering and washing. The Tennessee Valley Authority has been experimenting for the past five years with an acid process applied to white kaolin clay, but the committee finds that the alumina it produces it not as yet sufficiently pure. However, the TVA is continuing its investigations and hopes to perfect the process.

Finally alunite or alum stone, a common mineral, is another source of aluminum. The reduction requires sulfuric acid, a substance for which there are enormous other demands in the war effort. But the stone is composed mostly of potassium-aluminum sulfate, so that the acid can be made from the sulfur present in the mineral.

Next to low-silicon bauxite the best ore for aluminum is high-silicon bauxite, and the best use of the clay process is in connection with a Bayer plant, the committee concluded. Meanwhile search for new domestic sources of bauxite should be vigorously continued. There are no known deposits in Mexico or Canada.

*Science News Letter, August 15, 1942*

AGRICULTURE

# Four Argentine Scientists To Study Farm Products Uses

## Two Are Interested Particularly in Farm Waste Use; Making of Industrial Products from Corn Studied

GOOD neighborship and good agriculture alike will receive encouragement from the research sojourn of four Argentine scientists in this country, in a preliminary survey of industrial utilization possibilities of farm crops and wastes.

Three of the men are already in the United States. They are Carlos Clementino Zarate and Oscar Saturnino Mallea of the University of Santa Fe, both of whom are especially interested in problems of farm waste utilization; and Dr. Enrique Duprat of the University of Buenos Aires, who will look into possibilities of industrial products from corn and wheat. At the end of the month they will be joined by Jose Baialardo, chemical engineer of the University of Sante Fe.

The four scientists will spend several weeks visiting the four regional laboratories of the Department of Agriculture, at Philadelphia, Peoria, New Orleans and Albany, Calif., where research concentrates on finding new uses for farm products. Then they will settle down to six months of intensive research at whatever laboratory and in whatever line of work each visitor may select.

This research visit was arranged with the Government of Argentina by the State Department, the Coordinator of Inter-American Affairs and the Department of Agriculture.

*Science News Letter, August 15, 1942*

PSYCHOLOGY

# Rest Periods Vital in War To Aid Work Efficiency

## Adequate Lunch Periods, One Day Rest in Seven And Spaced Furloughs Urged By Government Experts

REST periods are vital to war production. This is stressed by the War Department, the Navy Department, the War Manpower Commission, the War Production Board and four other Government agencies in recommendations to war contractors.

America is at war and the ordinary leisurely summertime vacations are naturally out for the duration just as touring and sightseeing are out.

There can be no slacking of production, no relaxing of speed, no shutdown of any department that is needed in war production.

But rest periods are important for each war worker. They should be carefully distributed over the whole year, or the longest possible period, government officials point out. In this way fresh, rested reinforcements are constantly being brought into service on the production front.

Each day should have its rest periods. A 30-minute period for lunch is recommended by the Government Departments. In occupations that involve contact with poisonous substances, workers must also be allowed time to wash up before lunch.

Industrial psychologists have found that the amount of rest and the frequency of the periods required for peak efficiency depends a great deal on the type of work being done. It should be carefully planned for each sort of job in a plant. In some work a compulsory ten-minute rest interval every two hours is best. In other types of work, it may be best to allow each individual to select his own time to take such a short rest period when he feels fatigued.

"One scheduled day of rest for the individual, approximately every seven, should be a universal and invariable rule," declares the statement of the Government officials.

This does not mean any shut-down on Sunday. Plants and tools should be kept busy all around the clock and all around the calendar.

But for the individual, a 7-day work week is injurious to health, to production, and to morale, the statement emphasizes. Only in extreme emergencies should either workers or supervisors go without the weekly day of rest. Then it must be only for a limited time.

Psychologists would point out that this is even more important for the executive who does not need to punch a time clock than it is for the routine worker.

*Science News Letter, August 15, 1942*

***OLDEST***

***This railroad shock absorber is probably the oldest article received to date in the scrap rubber drive. Technicians say the 70-year-old product can be reclaimed.***

PSYCHIATRY

# Nervous and Mental Fitness Most Important at Fifty

HEALTH and fitness at 50 years of age involves mental, nervous and emotional fitness for the job. This type of health, particularly at 50 years, is "superior to mere physical fitness" and the 50-year-older has a right to expect his doctor help him achieve it, Dr. Roger I. Lee, of Boston, declared in a lecture at the Mayo Foundation.

Despite the publicity and ballyhoo about preventive medicine and periodic health examinations, Dr. Lee said the average patient never consults his physician until he has to, or is nagged into it by a friend or a wife.

Contrasting this with the great strides made in preventive dentistry and child care, Dr. Lee described the typical medical examination of the man in his fifties. If heart, blood pressure and kidneys are satisfactory, both patient and doctor are too apt to feel that the job is done for another year. The patient tells his wife he is sound as a nut; perhaps he smokes too much and needs a little exercise and a vacation—later, maybe. Diet suggestions are filed away in a bureau drawer, to be looked at next year. The patient does not get as much incentive to "do something about it" as he probably does with his dentist, Dr. Lee said.

Furthermore, the patient in his fifties should want to know, and should be told, what his health probabilities are for the next ten or twenty years; how he can avert trends of disease or deterioration which should be predicted by the doctor.

He seldom talks over his worries and fears, which may be more important than diet or exercise. How about his relationships with his family? Is there a slowly declining efficiency in his job? What is preventing him from getting the most out of life? How can he prepare himself for the sixties?

Dr. Lee would like to see more of the all-round, healthy cooperation between patient and physician, which a mother usually has with her children's doctor. Health and fitness cannot be achieved by mere freedom from actual disease.

*Science News Letter, August 15, 1942*

Metal "innards" from thousands of uncompleted vending and amusement machines have added an estimated 1,000 tons to the nation's *scrap* pile.

*Footrot,* prevalent disease in sheep, could be eradicated if all infected sheep were isolated, because the bacteria reach the hooves of healthy animals from the soil, where they were dropped from feet of infected sheep.

MEDICINE

## 1-A Army in A-1 Health; Better Record Than 1917

THAT 1-A man in the Army is staying A-1 in health, records in the Office of the Surgeon General, U. S. Army, show.

Not so long ago, going soldiering was an unhealthier job than it was dangerous. Up to the last World War, more casualties were due to disease than to battle wounds. Many can remember the influenza and meningitis epidemics that ravaged the army camps a war ago, killing the boys before they got near the front. All that is changed today.

Uncle Sam's large and growing Army for this present war has fought disease to a standstill. It is a much healthier Army than that of World War I. It not only has a better health record than that of 1917-1918 but one which equals and in some months has surpassed the health record of the small standing Army maintained during peaceful years between 1931 and 1940.

*Science News Letter, August 15, 1942*

GENERAL SCIENCE

## Science Teachers Advised To Stick to Their Jobs

MOST important war work that science teachers can do is right in their own laboratories and classrooms. To leave those tasks, however humdrum they may seem, is to endanger the country's future supply of scientifically trained men, needed now as never before, declares Dr. John S. Nicholas (*Science*, Aug. 7). Dr. Nicholas represents the National Research Council on the National Roster of Scientific and Specialized Personnel.

The speeding up of scientific training that is going on now in all universities and colleges involves the revision and "unfreezing" of many courses that have been permitted to become routine and conventionalized, Dr. Nicholas points out. The teacher must constantly face the challenge of differences in personalities of his students, and adapt his educational methods to the individual needs and peculiarities of the human material on his "production line".

Whatever else happens, Dr. Nicholas reëmphasizes, the drain on the teaching personnel must be checked: "The devastation of science departments by armed and government services must be rigidly scrutinized in the light of necessity. The resultant deterioration which shows absence of planning and foresight must not be allowed to continue. The universities' own needs must be weighed against other demands. The colleges and universities can play their part only by keeping active staffs intact and maintaining the morale of their teachers by recognizing this as a dominant part of the war effort."

*Science News Letter, August 15, 1942*

INVENTION

## Brake for Cannon Gives More Rapid, Steady Fire

STEADIER, more rapid fire by the light cannon that now form part of the armament of practically all warplanes is claimed for a type of weapon patented (No. 2,291,867) by Marc Birkigt of Bois-Colombes, France.

The invention applies to automatic weapons which operate by the sliding back of the whole barrel under the force of the recoil. To shorten this oscillating movement and reduce the jar, a muzzle brake consisting of a slotted sleeve is provided. This "lift-by-the bootstraps" arrangement takes up much of the force of the recoil. To reduce jar on the return of the barrel in its forward movement, there is a cushioning pneumatic cylinder.

*Science News Letter, August 15, 1942*

INVENTION

## Filament Drawn Like Wire Used In Synthetic Fabric

FILAMENTS of some of the newer synthetic fabric materials can be made tougher, stronger and more resilient by cold-drawing them through a die, as wire is drawn, states Merlin M. Brubaker of Wilmington, Del., in applying for patent 2,291,873, rights which he has assigned to E. I. duPont de Nemours and Company. The effect is due to the pulling of the large molecules in the material until their long axes are oriented in the same direction.

Filaments of relatively large diameter made by this method are described as being particularly useful for use in tennis rackets, fishline leaders and for musical instruments. By changing the shape of the die they can be given "fancy" cross-sectional forms, such as square, oblong, elliptical, triangular, even star-shaped.

*Science News Letter, August 15, 1942*

# IN SCIENCE

LANGUAGE

## Russ-English Lists Sought For Scientific Dictionary

SCIENTISTS who are fluent in Russian and have compiled lists of Russian-English equivalents for scientific words and terms for English-speaking colleagues are invited to send copies of these glossaries to a British organization that is now collecting materials for the eventual publication of an English-Russian scientific dictionary. The appeal is published in *Science* (Aug. 7) by E. J. Russell, chairman of the Anglo-Soviet Scientific Collaboration Sub-Committee, whose address is 3 Hanover Street, London W 1, England.

*Science News Letter, August 15, 1942*

ENGINEERING

## Radio Locators May Find Meteor, Measure Velocity

RADIO locators may locate meteors and measure their velocity. From India comes word that radio short waves can be reflected from shooting stars.

While listening to the Delhi short-wave station only 10 miles distant, members of the Research Department of the All-India Radio report that they frequently heard whistles of a peculiar nature. Beginning with a shrill note, the pitch fell rapidly to nothing or disappeared in one-fifth to several seconds. This is the Doppler effect, which may be observed when a locomotive whistle is rapidly receding. From it can be determined the velocity of the object.

In this case the velocities measured ran as high as 40 miles a second. Only meteors ever travel that fast through the air. In fact, watching the sky, the observers noted that when a meteor passed the peculiar whistle was heard. This provides a new method, they pointed out, of measuring the velocity of a meteor. It cannot be used at present because of restrictions on the use of radio, but after the war perhaps some of our many radio locators may be put to astronomical uses.

*Science News Letter, August 15, 1942*

NCE FIELDS

PUBLIC HEALTH

## British Prepare for Gas; Ointment Is Distributed

BRITISH civilians are asked to prepare for possible attacks of blister gas by getting "official bleach cream" from their pharmacists, writes the London correspondent of the *Journal, American Medical Association* (Aug. 1). This antigas ointment will counteract splashes of blister gas on the skin.

Since Churchill warned Hitler of retaliatory attacks if poison gas should be used against the Russians, the British have been preparing antigas measures for themselves.

Full instructions for counteracting mustard gas and lewisite, the two best-known blister gases, have been issued by the Ministry of Health. Since gas can penetrate clothes, they must be immediately removed and the skin washed with soap.

*Science News Letter, August 15, 1942*

ENGINEERING

## New Inflatable Pontoon Saves Rubber by Using It

**See Front Cover**

SAVING rubber by using rubber is the paradoxical achievement of the Corps of Engineers, U. S. A. By adopting a new-type inflatable pontoon to replace the aluminum boats standard for Army use until now, it has been possible to cut the number of transport truck-and-trailer units needed for carrying a full-length pontoon bridge from 72 to 36 (*Military Engineer,* August).

The tires of the old bridge train required 95,000 pounds of rubber. Tires of the new train, together with the rubberized fabric pontoons, require 65,000 pounds. Thus there is a clear saving in rubber of 30,000 pounds in favor of the new-type unit, and it is expected that as synthetic materials become available the rubber saving will become even greater.

In addition, of course, the aluminum now used in pontoons can be eliminated altogether, and thus made available to the always-hungry airplane industry. The aluminum pontoons now in existence will be continued in use until worn out or destroyed in action, but no more will be built.

One of the new bridges is shown on this week's SCIENCE NEWS LETTER.

*Science News Letter, August 15, 1942*

METALLURGY

## Nobilize Stainless Steel With New Silver Alloy

STAINLESS steel nobilized with silver to the extent of 0.1% becomes more stainless and more workable, according to U. S. Patent 2,283,902 issued to Dr. John Wulff, professor of physical metallurgy at the Massachusetts Institute of Technology, and assigned to the Chemical Foundation.

This would speed up production of stainless steel articles and might even make the metal suitable for replacement of aluminum in some applications, such as for the skin of airplane wings and fuselage. The patent provides a new method by which the silver becomes uniformly distributed throughout the metal and oxidation of the silver is prevented. Previous methods had encountered difficulties in these respects.

The new method alloys the silver first with nickel or manganese, with which it unites more strongly than directly with iron. This alloy is then introduced into the melt. The new stainless steel is still in the experimental stage. No commercial applications have yet been made.

*Science News Letter, August 15, 1942*

MEDICINE

## Other Chemicals May Act Similar to Sulfa Drugs

CHEMICALS which have their atoms built up into a structure resembling the life-saving "sulfa" drugs but actually contain no sulfo groups, might also be used in medicine, reports Dr. Julius Hirsch of the University of Istanbul (*Science,* Aug. 7).

Experiments showed that a chemical such as p-aminobenzamide has almost as strong an action against germs as equal amounts of sulfanilamide. Perhaps among derivatives of this chemical, Dr. Hirsch suggests, there can be found substances to supplement our arsenal of weapons against disease.

*Science News Letter, August 15, 1942*

MEDICINE

## Sugar Excretion Not Bad In Some Diabetic Cases

ADDITIONAL evidence that diabetic patients treated with a daily dose of the protamine zinc form of insulin may continue to excrete sugar and still remain in good health, is reported in the *Journal, American Medical Association* (Aug. 8).

Large doses of insulin administered in severe cases to prevent excessive amounts of sugar in the kidney excretion, often result in alarming illness due to reactions from the treatment. But after careful study, Dr. Edward Tolstoi and his associates suggest that the daily dose of protamine zinc insulin without too much regard for sugar level in the body fluids, often results in loss of other diabetic symptoms, maintenance of weight, and satisfactory control of the disease.

*Science News Letter, August 15, 1942*

NUTRITION

## Butteroil and Milk Powder Make Butter for Tropics

BUTTER for troops in the tropics is practicable without the elaborate and costly refrigeration mechanisms that now make it such a problem. It can be "assembled" out of two milk constituents, butteroil and skim milk powder, Charles S. Trimble of the Bureau of Dairy Industry, U. S. Department of Agriculture, has demonstrated. Powdered skim milk and water are stirred into the butteroil, and the emulsion is poured slowly into cold water. Butter granules are formed, and may be worked into butter in the usual way.

Butteroil is a clarified form of butterfat, which has been used in India for generations, under the name of "ghee." It also has some use in other dairy countries, notably Sweden and Switzerland.

Butteroil can be kept from spoiling in hot climates by packing in airtight containers with all oxygen excluded. Dr. George E. Holm, in charge of the Bureau's fat-spoilage research, demonstrated long ago that butter fat is spoiled by oxidation. He has now developed a practicable method for packing butteroil so that it will keep. At present, tin or other metal containers are used, but research is now under way to test the possible use of wooden kegs.

*Science News Letter, August 15, 1942*

PSYCHIATRY—ANTHROPOLOGY

# Hatred Is Healthy

## Balinese Studies Show Repressed Emotions in Youth Produce Abnormal Adult with Schizoid Personality

By MARJORIE ESTABROOK

SHOULD WE let ourselves go and really hate Hitler and the Japs, or try for the neat feat of loving our enemies while hating their sins?

One way to avoid fights is by never getting sore. This was the system used in Bali—before the Japs came. The poker-faced Balinese never got up steam enough to care much about anything, one way or the other.

There were some in this country too, who wanted us to try that with Hitler. It was none of our business-as-usual, they said, what happened in Europe. But, as one psychologist has put it, you can't love anything enough to defend it unless you can also hate the attacker.

Movies have been brought back from Bali, setting a new high for anthropological research, by Dr. Margaret Mead, associate curator of anthropology at the American Museum of Natural History, and Dr. Gregory Bateson, anthropologist of Cambridge University.

They not only show the Balinese citizen in action, but what made him that way—how his human emotions of love and hate were systematically discouraged by childhood training.

### Crime Crisis

These movies begin with a dramatic scene showing the biggest crisis which had ever disrupted community life in a sleepy Balinese village. This was the time when two thieves had made off with the entire village treasury, and the aroused citizenry had gathered for the trial. Suspects were rounded up and made to drink a magic brew which would condemn the guilty to lifelong pox and plague—including all his future reincarnations—unless he confessed and had the curse removed. The innocent could drink with immunity.

This whole scene is shown vividly in the movie, including the criminal's confession, but without Dr. Mead to explain things, this particular movie-goer would have taken it for a peaceful, not to say dull, family outing. Everyone sat around looking vaguely uncomfortable. The priest said a few words to the suspects, they drank, confessed, and were sentenced—but no one seemed to have his mind on it.

And yet Dr. Mead assured us that this scene represented the highest pitch of frenzy ever achieved in that village—outside of their ceremonial rituals, which we'll come to in a minute.

### Not Confined to Bali

Crazy? Well, when a person behaves that way in this society, he is labeled "schizoid." If he gets any worse, he is taken to a mental hospital. Schizoid behavior is certainly not confined to Bali, judging from statistics in this country. In 1940, 20,457 hospital patients, admitted for the *first time,* were diagnosed as schizophrenic. This figure is of course only a fraction of the total schizophrenic population of this country—not counting the potentially schizophrenic, or "schizoid" personalities. This, the most common form of mental disorder, usually appears in adolescence or early childhood, and is therefore also called the insanity of youth, "dementia praecox."

### Environment Considered

Modern psychiatrists, dissatisfied with older explanations based on heredity, are looking to the environment for causes. For one thing, there are no fixed boundary lines between the shy, sensitive "normal" or neurotic individual, and the suspicious, completely withdrawn schizophrenic. That is why psychiatrists are so interested in these movies of Dr. Mead and Dr. Bateson, showing how the schizoid personality is developed in Bali.

The Balinese apparently have fixed rules and customs for their behavior toward the child at each age level. At first, he is fondled and caressed like any other baby, and learns that crying gets results. But about the time he is learning to walk, he gets a rude shock. His parents begin their "teasing" games, which are considered not only the proper training, but good fun for everybody. For instance, Papa puts on a huge, scarifying mask and plays peek-a-boo. Mama utters cries of

*TEASING BABY*

***The Balinese baby is systematically teased and frustrated by his mother until he learns to repress hostility.***

*WITCH DANCE*

***In the Witch Dance, the poker-faced Balinese finally turns the dagger of hostility against himself.***

fright and horror, and pushes the baby toward Papa. The more he runs back for protection, the more frightened she pretends to be, and the more she pushes him toward Papa. If the baby finally gives up and just lies down screaming, they go off and leave him.

### When Baby Comes

His next lesson in deportment begins before the new baby comes along. Even before he is weaned, the child learns that he has a very vigorous rival for his milk supply. The customary ritual here is for the mother to borrow a neighbor's baby to nurse, and tease her own child by making him watch. When he gets jealous and tries to climb up for his share, she keeps pushing him away. This seems to be a very funny game, for the adults. By the time his next little brother or sister is born, the child has learned not to show any jealousy. But he has also learned not to feel much of anything, either. He knows by this time that human emotions, and human beings, are pretty unreliable.

The next scene shows two little Balinese boys at play. They are sitting together in the sun, not talking, not doing anything. It looks like a peaceful Sunday at the Old Soldiers' Home.

Under this training, the Balinese grows up to be a poker-faced individual, with his emotions almost completely repressed, and formalized into complicated rituals, as you can see in his art and dancing. This is true not only of the schizophrenic, but of the mild rituals we all go through in some department of our lives—from always having to shave on the left side first or never stepping on a crack, to going downstairs three times to see if we really locked the kitchen door.

### Why Women Stay Young

Dr. Mead indicated that human relationships in Bali were at a minimum, which may be one reason why all the women stayed young and beautiful, and travelers were so impressed with their contented look.

Calling the Balinese culture "schizoid" does not mean that all its people were schizophrenic. It is conceivable that a child might survive his early training with his emotions somewhat intact, and still learn that it was not good form to show any feeling. But at the same time, any schizoid person could get along pretty well in that society without being considered queer.

The difference between the Balinese culture and our own, as one psychiatrist remarked, is that we bring up children to be schizophrenic and then lock them up. What he meant by this slightly bitter comment, is that there is something wrong with a culture which develops certain traits in so many of its people and then considers them abnormal. And of course the Balinese movies confirm one thing the psychiatrists have been telling parents: that harmful "spoiling" never results from love, but from the inconsistency of first spoiling a child and then frustrating him. That is, leading him to expect what he is not going to get.

The Balinese game connected with breast-feeding seems to produce a strong emotional reaction, judging by one of their ceremonial dances. In this, the chief villain is a witch costumed with long, frightening, hairy breasts. All the young men of the village try to fight with her, but she won't fight. She shows no reaction and they are the ones who are overcome. They fall to the ground and try to kill themselves with daggers. At this point everyone goes into a frenzied trance, in which it is only some self-preservative instinct, apparently, which prevents them from injuring themselves. They are finally carried to the temple, where they are brought out of their more or less hypnotized state by the sprinkling of holy water.

*ART*

***The Witch-Mother of Bali who overcomes her sons by passive resistance, as seen by a Balinese artist.***

### New Technique

Dr. Mead has introduced a new technique in anthropological study, by showing this dance against the background of childhood training, which contains some startlingly similar features. The witch with disagreeable breasts may appear in our own dreams, if we have had childhood frustrations concerning food. The fact that she puts up no fight, but overcomes them with passive resistance (as the mother used to walk away when the child screamed), seems to refer to the

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hopelessness of getting any reaction from the parents. Fear, jealousy, anger, were met with passive discouragement until the child learned that such emotions were useless. The daggers may illustrate the human tendency to turn such useless or repressed aggression against oneself.

However, this is all speculation, and Dr. Mead was careful not to draw unfounded conclusions from her work in Bali. Everyone would agree, though, that these movies are a welcome change from the usual travelogue, in which the ceremonial dances are just too quaint and picturesque for anything. It never seems to occur to the travelites that all those darling customs may mean something dead serious to the people involved.

*Science News Letter, August 15, 1942*

PHARMACY

# New Anti-Malarial Drugs Announced Ahead of Time

QUININE substitutes which will be official in the new U. S. Pharmacopoeia have been announced ahead of schedule, together with standards for their preparation because of the urgent need for protecting our overseas forces against malaria.

Due to the present shortage of quinine, two synthetics, pamaquine naphthoate and quinacrine hydrochloride, may be of special value in keeping our armed forces free from the disabling periodic fever. Hearings are now under way in Congress on quinacrine patents which are alleged to restrict production.

Totaquine, another anti-malarial, will also be in the new official book of drugs. This contains the familiar quinine but is mixed with several other related substances also found in the cinchona barks. It is expected that this mixture can be obtained from native cinchona barks found in Mexico and Central and South America instead of our former source in Japanese-held territory in the Far East.

*Science News Letter, August 15, 1942*

VETERINARY MEDICINE

# Nurses Germs to His Body During Freezing Flight

A SCIENTIST who nursed a tubeful of dangerous disease germs carefully with the warmth of his body during a freezing flight to England, as a mother might shield her baby from the cold, provides a war drama of science from the U. S. Department of Agriculture.

A vaccine is available to protect cattle against the deadly disease, brucellosis, contagious abortion which causes the loss of thousands of unborn calves every year, and also produces the persistent and debilitating disease known as undulant fever among human beings. It is made by chemical treatment of the disease germs themselves.

This vaccine was needed in Britain, for the protection of the island's cattle and maintenance of the food supply. Dr. C. K. Mingle of the Bureau of Animal Industry was assigned to cooperate with British veterinary scientists in the production and distribution of the vaccine over there. With a tubeful of the virulent germs, he took off by bomber some months ago from Canada. A blizzard was raging at the time, and he kept the germs from fatal chilling by tucking the tube inside his flying suit, where the warmth of his body would keep the culture up to the necessary temperature.

Arriving in England, he found that a certain type of centrifuge needed in his work was not available. This also was flown over by bomber.

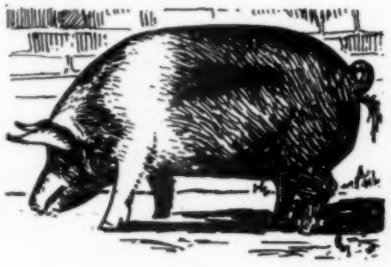
Everything is going smoothly now, Dr. Mingle reported on his return. The laboratory is making large quantities of the vaccine daily, with output still increasing. Production of milk and beef in Britain is expected to go up materially as a consequence of the protection to be given the cattle.

*Science News Letter, August 15, 1942*

AGRICULTURE

# NATURE RAMBLINGS

*by Frank Thone*



## "Keep 'Em Healthy"

LETTING diseases or parasites of farm animals do damage unchecked, is giving license to a ceaselessly active mob of saboteurs that even in spite of our best efforts still do American livestock well over $400,000,000 worth of damage every year, it is pointed out in the 1942 Yearbook of Agriculture, just published by the U. S. Department of Agriculture.

Nor is the cash loss the only thing involved, the Yearbook's editor, Gove Hambidge, continues. Diseased animals readily communicate some of their worst ills to human beings: anthrax, brucellosis, glanders, horse sleeping sickness, trichinae, tuberculosis, rabies, and a whole medical chamber of horrors besides. Human beings in this country don't get foot-and-mouth infection because the eternal vigilance of the Bureau of Animal Industry has thus far stamped out every outbreak of this terrible plague of hoofed animals that has occurred within our borders.

The new Yearbook, titled *Keeping Livestock Healthy,* is devoted entirely to problems of animal diseases and parasites. With a foreword under the slogan "Keep 'Em Healthy." by Secretary of Agriculture Claude R. Wickard, the 1,238 pages are filled with 98 articles by 11 scientists headed by Dr. John R. Mohler, chief of the Bureau of Animal Industry.

Although the book takes up farm-animal diseases one by one, and animal by animal, it does not undertake to set up every farmer as his own veterinary. On the contrary, its aim is to enable the farmer to avoid need for calling the "vet" quite so often, especially since war needs have drawn off a large section of that none-too-numerous profession and the ones still available have to be "spread thin" and made to go as far as possible.

The 1942 Yearbook of Agriculture is the seventh, and the last, of a notable series edited by Gove Hambidge. Since the 1936 volume, each Yearbook has been devoted to one special subject: genetics, soils, food, climate, etc. Each has thus become a first-class reference book, unique in the agricultural literature of any language.

*Science News Letter, August 15, 1942*

## ● RADIO

***Saturday, August 22, 1:30 p.m., EWT***

**"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.**

**Dr. W. F. G. Swann, Director of the Barthol Research Foundation of the Franklin Institute, will discuss "Science and the Happiness of Man."**

***Tuesday, August 18, 7:30 p.m., EWT***

**Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.**

**One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.**

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Watch Out for Tricky Eyes

# Vision for Victory

THE future of the world today depends on American industry's capacity to produce the implements of war. The Soldiers of Industrial Production must be welded into history's most efficient fighting organization before the spectre of aggression can be dispelled.

Because most skills depend on efficient functioning of the eyes, and because nearly one-third of the people of the nation still have uncorrected faulty vision, a valuable public service is performed by calling attention of American workmen to the importance of proper care of their eyes.

Taking as its theme "Vision for Victory," an advertising campaign (one insertion of which is reproduced above) is now appearing in an extensive schedule of nationally-circulated magazines. The program is sponsored by the Better Vision Institute, a non-profit service association, supported by the manufacturing, distributing and professional branches of ophthalmic science.

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# New Machines And Gadgets

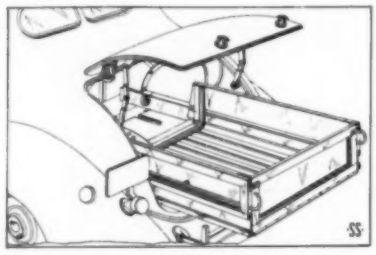
## Novel Things for Wartime Living

**Synthetic rubber latex** is being used to make perfect replicas of the complicated blood system of the human kidney, replicas that reveal tiny details which cannot be seen in the ordinary anatomical cross-sections. They are of great value in the study of kidney diseases. The latex is injected into the blood vessels, and after the rubber has set, the human tissue is dissolved away with acid. Red and blue colors may be used to distinguish arteries and veins. The preparation of such "corrosion specimens" is not new, but the injection fluids hitherto used did not penetrate the finest blood vessels which are important in the proper functioning of the kidney.

**Even the blind** may thread needles with an improved needle threader recently patented, and those with poor eyesight or trembling hands may also find it helpful. The needle is inserted eye first into a hole in the side of the instrument and the thread is laid in a slit at right angles to the needle and just over the eye. A plunger is pushed which thrusts a tiny sort of flat crochet hook through the eye, hooks the thread and draws it back through the eye. The instrument is mostly composed of molded and cemented plastic.

**Magnetic compasses,** with cases and tops composed of transparent plastic instead of the usual brass and glass, may answer the problem of depleted supplies of French compasses, especially for school and college physics laboratories. On the smaller compasses the plastic cover is molded into a magnifying glass so that the small dial figures may be read easily. The plastic is not brittle and will not break like glass when dropped.

**The sliding tray** shown in the illustration in the storage compartment of an automobile can be loaded or unloaded without getting your head



dangerously under the lifted lid. Also in a pinch both the tray and the space behind it can be filled, almost converting your car into a small truck, which may sometimes be useful in these days. This device has been recently patented.

**Two pictures,** side by side, of the same object can be made with any ordinary camera by means of an attachment, recently patented, which requires no alteration in the construction of the camera or its lens. Afterwards the two pictures can be recombined on a screen by means of a projector equipped with the device. Color photographs can be made and projected in this way which, the inventor claims is simpler and cheaper than the methods now used.

**A lipstick holder** with a little roll of disposable tissue carried in an extension of the tube is one of the latest patented inventions. The roll can of course be replaced by a new one when used up.

*If you want more information on the new things described here, send a three-cent stamp to* SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 117.*

*Science News Letter, August 15, 1942*

MEDICINE

## Sulfur Vanishing Cream Best to Repel Chiggers

A NEW way to use sulfur for repelling chiggers is reported by Major John E. Weigel, of the U. S. Army Medical Corps (*Military Surgeon,* February).

Dusting the body with powdered sulfur before going out is the old standard method of preventing chigger bites. Chiggers hate sulfur and will shun it like the plague. Powdered sulfur, however, is soon washed off by perspiration.

A lotion of sulfur and calamine is effective, Major Weigel reports, but takes time to apply to the arms and legs and more time is required for it to dry before going out. Most practical for soldiers, he found, is a vanishing cream into which sulfur is mixed.

Several vanishing creams were tried but the most satisfactorry, he states, is one known as "Hazeline Snow." The cream can be applied quickly, dries rapidly, and leaves an almost invisible film of sulfur on the skin which is quite effective in repelling chiggers besides being cool and refreshing to the skin.

Sulfur is irritating to the skin of some persons, so a doctor should be consulted before using it either powdered or in a cream or lotion.

*Science News Letter, August 15, 1942*

METALLURGY

## Lead in Babbitt Metal Saves Tin for Other Use

A VERY considerable saving of tin has been effected by substituting for the standard babbitt metal used for bearings, which contain 83 1/3% of tin, a lead-base babbitt of the following composition: 82½% lead, 15% antimony, 1% arsenic, 0.5% copper, and only 1% of tin.

The new bearing metal is the result of innumerable tests and trials, and has been found satisfactory except for very heavy bearings. By making this substitution in electric motors one company is saving 200,000 pounds of tin a year.

*Science News Letter, August 15, 1942*

*"Camel's hair" brushes* are usually made from squirrel's hair; real camel's hair would make a very inferior brush.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PSYCHOLOGY

# Handwriting Analysis May Be Put to Scientific Test

## New Scales for Evaluating Handwriting Differences Makes Possible Objective Statistical Study

THE ANALYSIS of handwriting, as a method of studying personality, may be put to scientific test. This is made possible by new scales of measurement developed by Mrs. Thea Stein Lewinson, a graphologist, in collaboration with Dr. Joseph Zubin, associate research psychologist at the New York Psychiatric Institute.

These scales, published in a book entitled "Handwriting Analysis," represent the first attempt in this country to put graphology on a scientific basis, by offering a statistical method of checking results.

The type of handwriting analysis used by these authors is an outgrowth of a method developed in pre-Hitler Germany by Ludwig Klages and Max Pulver, not widely known in this country. Here, graphology has ranged from the fortune-teller type of commercial analysis to the study of handwriting as a collection of isolated signs (size, shape and position of t-bars, i-dots, etc.), each having a definite "meaning."

German graphologists, however, were interested in handwriting as an expressive movement. That is, they studied the muscular movements which produced it, deducing from the finished product whether these movements were jerky, uncoordinated, too contracted or too free or whether they were rhythmically well balanced, which they believed indicated a well adjusted personality.

In addition, handwriting was evaluated according to modern, dynamic concepts of personality, which include unconscious, emotional factors.

The contribution made by Mrs. Lewinson and Dr. Zubin is in establishing objective measurements for the "rhythmic balance" of handwriting, heretofore arrived at mostly by intuition.

On these scales of measurement, the handwriting of abnormal personalities shows more inconsistency, more deviation from ryhthmic balance, than the writing of "normals." Samples are reproduced showing the writing of a mental patient (paranoid schizophrenic) before and after his breakdown. It is hard to believe that the same person wrote them both. Apparently a diagnosis could be made from the "after" sample, but it is not stated explicitly whether a forecast of mental illness could have been made beforehand.

These samples would interest the layman who is accustomed to classify handwriting according to whether it looks nice or not. In the "before and after" series, the patient's writing during his breakdown is smaller, more meticulous, and "prettier" than his previous handwriting. But according to graphology, such terms as "beautiful flowing hand," "neat," "bold" or "feminine" have little to do with the case, nor is rhythmic balance immediately visible to the naked eye. The procedure outlined in this study is to select the first word in the first line, the middle word in the middle line, and the last word of the last line, for detailed measurement and analysis.

Mrs. Lewinson is a trained graphologist who practised in Berlin and Paris. Since coming to this country in 1933, she has made special studies on the handwriting of children and adolescents, criminals, and abnormal personalities. She has also collaborated with physicians in the field of psychosomatic medicine (the interaction of physical and psychological factors in disease). Among her publications is the first English interpretation of Ludwig Klages' work.

*Science News Letter, August 15, 1942*

GENERAL SCIENCE

## Exchange of Microfilms Helps Science War Effort

SCIENTIFIC information and documents are being sent back and forth across the Atlantic in the form of microfilm—miniature photographs that may be read by enlargement — in order to speed the mutual war effort of Britain and the United States.

This is revealed in a statement by Prof. A. V. Hill, secretary of the Royal Society, published in London (*Nature*, June 13). The use of microfilm for scientific purposes began in the country in 1937 when literature in libraries was reproduced in this way for research workers.

Regular scientific collaboration between American and British scientists has now been arranged with liaison officers in both capitals and other research centers. Experts are also ferried by air from one country to the other.

Travel and communication is still too slow to suit Prof. Hill who says that "great difficulty is still experienced from slowness of travel and transmission of scientific people and information." At present, official communication with the United States from England may take from two to six weeks.

*Science News Letter, August 15, 1942*

In six months the War Production Board has taken over nearly 1,000 miles of abandoned and non-essential *railroad track*.

*Flame cleaning* of structural steel leaves the surface warm, dry, free of rust and unbonded mill scale, and ready for its primer coat.

Traveling *"musettes,"* museum displays of poisonous plants, toxic insects and disease carriers, are being prepared for circulation among army camps where such enemies as poison ivy and inedible mushrooms are a hazard.

Small quantities of *silver* are substituting for tin, copper, and other scarce metals in almost every motor, generator, transformer and other electrical apparatus now being made by one war plant.

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# First Glances at New Books

NUTRITION

WARTIME MEALS, How to Plan Them, How to Buy Them, How to Cook Them — Margot Murphy — *Greenberg,* 258 p., $2. By the Food Editor of the *New York Times.* Informally written, it covers such present-day problems as food shortages and substitutes and emphasizes economy coupled with sound nutrition.

*Science News Letter, August 15, 1942*

ARCHITECTURE—ENGINEERING

HOW TO PLAN A HOUSE — Gilbert Townsend and J. Ralph Dalzell—*American Technical Society,* 525 p., illus., $4.50. For prospective home owners, builders, and carpenters, this book will prove equally interesting. Illustrations include photographs, architect's drawings and plans, while the text describes the various types of homes and construction details.

*Science News Letter, August 15, 1942*

MEDICINE

AMERICAN RED CROSS TEXTBOOK ON RED CROSS HOME NURSING — Lona L. Trott—*Blakiston,* 431 p., illus., 60c. A useful, easy-to-read text or reference book covering the essentials of home management, child care, and nursing.

*Science News Letter, August 15, 1942*

AGRICULTURE

KEEPING LIVESTOCK HEALTHY, YEARBOOK OF AGRICULTURE, 1942—*U. S. Dept. of Agriculture, Gov't. Print. Off.,* 1276 p., illus., $1.75. See page 109.

*Science News Letter, August 15, 1942*

BIOCHEMISTRY

A SYMPOSIUM ON RESPIRATORY ENZYMES—*Univ. of Wisconsin Press,* 281 p., $3. Proceedings of an important meeting held at the University of Wisconsin, at which present status of research on respiratory enzymes was thoroughly discussed. Biochemists and physiologists will need this book, to bring their reference literature really down to date.

*Science News Letter, August 15, 1942*

CIVILIAN DEFENSE

THE AIR RAID WARDEN IN AMERICA, A Manual—Jordan W. Lambert; edited and revised by Ira W. Hirshfield — *Hastings House,* 57 p., $1. A very handy, practical little manual, which can be carried about easily by a man whose bookshelf has to be in his pocket. Treatments of individual topics are necessarily brief, but the subject is adequately covered.

*Science News Letter, August 15, 1942*

NAVAL SCIENCE

SUBMARINES—Herbert S. Zim—*Harcourt, Brace,* 306 p., illus., $3. The full story of submarines, in simple language that any landsman can understand. We learn here not only how submarines are built and what life in them is like, but the scientific principles on which they are operated.

*Science News Letter, August 15, 1942*

CHEMISTRY

ELEMENTARY PHYSICAL CHEMISTRY—Merle Randall and Leona Esther Young —*Randall and Sons, Berkeley, Calif.,* 455 p., photolith, $4.50. Classical physical chemistry, modernized in accordance with the newer knowledge concerning the electronic structure of the atom, quantum theory, statistical mechanics, etc., is how the authors style their viewpoint. It aims at a happy medium between the hyper-theoretical and the merely factual.

*Science News Letter, August 15, 1942*

## Just Off the Press

CATALOGUE OF BIRDS OF THE AMERICAS AND THE ADJACENT ISLANDS IN FIELD MUSEUM OF NATURAL HISTORY (Part 1, No. 1)—Charles E. Hellmayer and Boardman Conover—*Field Museum of Natural History,* 636 p., $5.

FUNDAMENTALS OF PHYSICAL CLIMATOLOGY—V. Conrad—*Blue Hill Meteorological Observatory,* 121 p., maps, tables, $1.25.

HEAT TRANSFER BY INFRARED RADIATION IN THE ATMOSPHERE — Walter M. Elsasser — *Blue Hill Meteorological Observatory,* 107 p., charts, $1.25.

HOW TO PLAN A HOUSE—Gilbert Townsend and J. Ralph Dalzell—*American Technical Society,* 525 p., illus., $4.50.

HOW TO TRAIN SALESPEOPLE—John H. Dillon —*American Technical Society,* 15 booklets in buckram box, $6.

ISOMERIZATION OF PURE HYDROCARBONS—Gustav Egloff, George Hulla and V. I. Komarewsky—*Reinhold,* 499 p., $9.

KEEPING LIVESTOCK HEALTHY, YEARBOOK OF AGRICULTURE, 1942—U. S. Dept. of Agriculture—*Gov't. Print. Off.,* 1276 p., illus., $1.75.

MODERN ELECTROPLATING—*Electrochemical Society,* 399 p., $5.50.

THE NATURE AND PREVENTION OF PLANT DISEASES—K. Starr Chester—*Blakiston,* 584 p., illus., $4.50.

PETROLEUM DEVELOPMENT AND TECHNOLOGY, 1942—Petroleum Division—*American Institute of Mining and Metallurgical Engineers,* 565 p., $5. (Transactions, vol. 146).

PROCEDURE HANDBOOK OF ARC WELDING DESIGN AND PRACTICE—(7th ed)—*Lincoln Electric Co.,* 1267 p., illus., $1.50.

MILITARY SCIENCE

GLOBAL WAR, An Atlas of World Strategy — Edgar Ansel Mowrer and Marthe Rajchman — *William Morrow,* 128 p., maps, $1. For those of us who find a fascination in running this war from the observation-post of our own living-room or front porch, this book, with its simple outline maps and broadly sketched strategic lines, will have a decided fascination.

*Science News Letter, August 15, 1942*

MEDICINE

PSYCHOTHERAPY IN MEDICAL PRACTICE —Maurice Levine—*Macmillan,* 320 p., $3.50. Recommended reading for the practising physician. This is an unusually sound and complete handbook of basic psychiatry, and as such will be of interest to the general reader as well as doctors.

*Science News Letter, August 15, 1942*

ANTHROPOLOGY

NEGROES IN BRAZIL; A Study of Race Contact at Bahia — Donald Pierson — *Univ. of Chicago,* 392 p., illus., $4.50. The color line crumbled long ago in Brazil, with results that may be looked upon with misgiving, even with horror, by many North Americans. The country most concerned, however, seems to have thriven on miscegenation, some aspects of which are sympathetically presented in this book.

*Science News Letter, August 15, 1942*

PLANT PATHOLOGY

THE NATURE AND PREVENTION OF PLANT DISEASES — K. Starr Chester — *Blakiston,* 584 p., illus., $4.50. A textbook, with chapters arranged according to causal organisms, including full treatment of physiogenic diseases. Ecological conditions are kept well in mind in prescribing control and prevention methods.

*Science News Letter, August 15, 1942*

CHEMISTRY

ISOMERIZATION OF PURE HYDROCARBONS —Gustav Egloff, George Hulla and V. I. Komarewsky—*Reinhold,* 499 p., $9. The octane number of a hydrocarbon is profoundly influenced by the position of the side-chains in the molecule. This position can be shifted by the process of isomerization which thus becomes of high importance in the petroleum industry and particularly in aviation. This important and timely work is a thorough study of the subject.

*Science News Letter, August 15, 1942*